SERUM PFOA AND PFOS LEVELS AND LIVER FUNCTION BIOMARKERS IN THE C8 SCIENCE PANEL STUDY

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Background and Aims: Perfluorooctanoate (PFOA) and perfluorooctane sulfonate (PFOS) have been found in relatively higher concentration in liver; in rats, they have been associated with hepatocellular adenomas. Some studies in humans have reported non consistent associations between PFOA and liver enzymes. The aim of this study is to examine the cross-sectional association between serum levels of PFOA and PFOS with markers of liver function in adults.
Methods: In the C8 Science Panel Study in the Mid Ohio Valley, associations between liver markers and PFCs have been investigated in 47,092 eligible adults. We studied alanine transaminase (ALT), gamma-glutamyltransferase (GGT), and total bilirubin as markers of liver function. Linear and logistic regression models (using high enzyme levels as endpoint) were fitted adding potential confounders (age, physical activity, Body Mass Index, ethnicity, alcohol consumption, socio-economic status, fasting status, month of blood sample, and insulin resistance).
Results: Ln-transformed values of ALT are significantly associated with ln-PFOS in linear regression models (beta 0.020, SE=0.003, $p<0.001$), and in logistic regression models with a steady increase in the OR estimates across deciles (p-value for trend across deciles <0.001), and a significant OR for ln-unit of PFOS (OR=1.13, 95% C.I. 1.07-1.18, $p<0.001$). No association was observed between GGT and PFOS; linear regression models show a positive association between bilirubin total and PFOS (beta 0.051, SE 0.003, $p<0.001$). Findings for PFOA will also be presented but must first be presented to the local community.
Conclusions: This study includes a large population exposed to higher than background levels of PFOA and typical levels of PFOS. The association of ALT with PFOS confirms previous findings, while the association of bilirubin total was in the opposite direction than previously observed.